



# **Mississippi Department of Marine Resources**

## **Marine Biotoxin Contingency Plan**

Revised September, 2016

### **Marine Fisheries, Shellfish Bureau**

### **Marine and Estuarine Shellfish Growing Areas**

#### **A. Routine Shellfish Sampling and Assay Program**

- 1) The Mississippi Department of Marine Resources (MDMR) will collect routine water samples for observation of the presence of phytoplankton. Samples will be conducted twice per month when shellfish growing areas are open to the harvest of oysters or prior to opening. Samples will be collected by boat throughout the season from indicator stations, to be assayed for the presence of harmful algal blooms (HAB). The MDMR will coordinate with the Department of Environmental Quality, South Regional Office (MDEQ) Gulf Coast Research Laboratory (GCRL), Alabama Department of Public Health (ADOPH), or other appropriate agencies for assessment of samples when necessary.
  - i. Routine phytoplankton sample stations are (See Figure 1):
    - a. WS 2-14 – (30.28495° / -89.237116°)
    - b. WS 2-15B – (30.196433° / -89.225266°)
- 2) MDMR personnel will make field observations by boat during routine, weekly water sampling trips of shellfish growing areas. Areas of discolored water suspected to be from a bloom of phytoplankton will be noted, GPS coordinates recorded and a water sample collected when possible.

#### **B. Emergency Shellfish Sampling and Assay Program**

- 1) MDMR personnel will investigate phytoplankton blooms reported by a reliable source.
- 2) Reports to the MDMR of a marine biotoxin detected in the adjacent waters of bordering states will intensify monitoring efforts.
- 3) Over flights of Mississippi's shellfish growing areas may be conducted as deemed necessary. Flight paths will include as many active reef areas as possible.
- 4) MDMR personnel will investigate indications of a potential bloom by collecting water samples for analysis where deemed appropriate.
- 5) MDMR, GCRL, ADOPH or other appropriate personnel will make identifications and cell counts per liter where appropriate.

- 6) When possible, the MDMR will coordinate control actions taken by other state or federal agencies involved.
- 7) Phytoplankton samples may be conducted periodically in addition to opportunistic samples (i.e. fish kills, visible blooms, etc.) at the following locations (See Map Figure 2):

Area	Water Sample Station #	Latitude (Dec. Deg.)	Longitude (Dec. Deg.)
1	1-7	30.184233°	-89.425617°
2	2-13C	30.218100°	-89.328000°
2	2-14	30.284950°	-89.237117°
2	2-14C	30.253533°	-89.180850°
2	2-15B	30.196433°	-89.225267°
3	3-8	30.31705°	-89.055916°
4	4-2A	30.217267°	-89.137450°
4	4-2B	30.207250°	-89.122700°
4	4-8	30.256833°	-89.072283°
4	4-9	30.219867°	-89.070500°
5	5-6	30.35515°	-88.939966°
5	5-11	30.340050°	-88.774100°
6	6-10	30.343900°	-88.602667°
6	6-15	30.295417°	-88.573833°
7	7-1	30.270717°	-88.497450°
7	7-2	30.31595°	-88.421683°
8	8-3	30.353233°	-88.440750°
8	8-11	30.374883°	-88.39915°
8	8-14	30.349367°	-88.405550°

C. Prevention of Harvesting Contaminated Species.

- 1) The harvest of shellfish contaminated by the presence of marine biotoxin-producing organisms in numbers sufficient to cause a health risk will be prevented by the closure of affected waters.

D. Closure of Growing Areas and Embargo of Shellfish

- 1) Identification of the dinoflagellate *Karenia brevis* (Synonym: *Gymnodinium breve*) within the water column, exceeding 5,000 organisms per liter will immediately trigger a closure of affected shellfish growing areas in Mississippi. Reefs that are

- affected will remain closed to harvesting until concentrations drop below 5,000 cells per liter.
- 2) Identification of the dinoflagellates *Prorocentrum minimum*, *Alexandrium monilatum* (Synonym: *Gonyaulax monilata*), or the blue-green algae *Oscillatoria erythraea* will warrant no special actions regarding shellfish.
  - 3) In the event that unknown biotoxin-producing organisms are encountered, technical assistance from the Food and Drug Administration (FDA) and others will be sought in determining closing and re-opening criteria and procedures.
  - 4) Shellfish-growing waters will be closed immediately and contaminated shellfish that have been harvested from an affected area shall be returned to the waters upon the presence of marine biotoxin-producing organisms in numbers sufficient to cause a health risk.
  - 5) Authority to close waters or embargo shellfish rests in:
    - i. Mississippi Code of 1972, § 49-15-3. Definitions.
      - a. (e) "Illegal oysters" means:"
        - a. (i) "All untagged shell stock"
        - b. (ii) "Shell oysters obtained from uncertified shops or dealers or from an unlicensed catcher;"
        - c. (iii) "Oysters obtained from waters not declared safe and sanitary by the department, except those oysters caught by the commission for re-laying or under private leases pursuant to Section 49-15-27"
        - d. (iv) "Shucked oysters obtained from uncertified shops or repackers"
    - ii. Mississippi Code of 1972, § 49-15-15. Powers and duties of commission.
      - a. (1)(a) "To exercise full jurisdiction and authority over all marine aquatic life and to regulate any matters pertaining to seafood, including cultivated seafood;"
      - b. (1)(b) "To adopt, promulgate, amend or repeal, after due notice and public hearing, in accordance with the Mississippi Administrative Procedures Law and subject to the limitations in subsection (2) of this section, rules and regulations authorized under this chapter, including, but not limited to, rules and regulations necessary for the protection, conservation or propagation of all seafood in the waters under the territorial jurisdiction of the State of Mississippi..."
      - c. (1)(n) "To develop a resource management plan to preserve seafood resources and to ensure a safe supply of these resources."
    - iii. Mississippi Code of 1972, § 49-15-21. Enforcement officers; reserve unit
      - a. (2) "...The enforcement officers may seize at any time aquatic life caught, taken or transported in a manner contrary to the laws of this state, and may confiscate and dispose of the same..."
    - iv. Mississippi Code of 1972, § 49-15-36. Oyster reefs and bottoms; rotating opening; closing of oyster reefs; special permits for taking oysters during closed season; depuration.

- a. (3) "... The enforcement officers may seize at any time aquatic life caught, taken or transported in a manner contrary to the laws of this state, and may confiscate and dispose of the same..."
  - v. Mississippi Code of 1972, § 49-15-44. Sale or possession of illegal oysters prohibited; penalties
    - a. "The commission shall prohibit the sale or possession of illegal oysters. It is unlawful for any person, firm or corporation to possess or to engage in the sale of oysters not certified in this state, or to shuck or repack for sale any illegal oysters, unless that person, firm or corporation possesses a bill of sale, valid permit or affidavit of another state, properly dated, evidencing the legality of the sale or possession of the oysters in that state. Any person in possession of illegal oysters shall be subject to civil or criminal prosecution and shall be fined not less than One Hundred Dollars (\$ 100.00) or punished as provided in Section 49-15-63."
  - vi. Title 22 Part 1: Rules and Regulations for Shellfish Harvesting, Tagging, Landing, Unloading, Transporting, Relaying, Management, Area Classification, and Other Shellfish Related Activities in The State, And The Leasing of Territorial Waters Under the Jurisdiction of the State of Mississippi
    - a. Chapter 08: Shellfish Area Openings and Closings
      - a. (102) "If closure is necessitated by any other polluting event, which threatens imminent peril to public health, closure will be immediate and any oysters or other shellfish taken which have been subjected to such pollution as determined by the MDMR shall be returned to the water."
    - b. Chapter 12: Adulterated, Misbranded, or Unlabeled Shellfish and Products
      - a. (100) "It shall be unlawful for any person within the state of Mississippi to produce, harvest, provide, purchase, sell, offer, possess, or expose for sale, or have in possession with intent to sell, any raw shellfish and shellfish products which are adulterated, misbranded, or unlabeled and no person shall hold or pack shellfish under conditions whereby the shellfish may become adulterated."
      - b. (100.01) "Any adulterated, misbranded, mislabeled, or unlabeled shellfish or shellfish products may be impounded by the direction of the MCMR or as hereby authorized the MDMR, its Executive Director, Director of Marine Fisheries, the Program Coordinator or other MDMR designee in charge of molluscan shellfish handling and processing, or Marine Patrol Officer."
      - c. (100.02) "Seizure and disposal of such shellfish products shall be by the direction of the MCMR, or as hereby authorized the MDMR, its Executive Director or Marine Patrol Officer."
    - c. Chapter 21: Penalties

- a. (103) “Any person in possession of shellfish in violation of any chapter of this Part shall be subject to confiscation and disposal of such shellfish by direction of any designated Marine Patrol Officer of the MDMR”
- E. Provide for Product Recall.
  - 1) Title 22, Part 1, Chapter 08: Shellfish Area Openings and Closings
    - i. (102) “If closure is necessitated by any other polluting event, which threatens imminent peril to public health, closure will be immediate and any oysters or other shellfish taken which have been subjected to such pollution as determined by the MDMR shall be returned to the water.”
- F. The MDMR will immediately disseminate information on the occurrences of harmful algal blooms and toxicity in shellfish meats to the shellfish industry, local health agencies, and adjacent states by the most appropriate and effective communication means available.

## Marine Fisheries, Shrimp and Crab Bureau

Because there is no evidence that brevetoxins from *Karenia brevis* build up in the tissue of Penaeid shrimp species and Blue Crab, the MDMR Shrimp and Crab Bureau will not close the shrimp and Blue Crab fisheries; however, the general public should be advised not to consume any of the internal organs (i.e. gills, hepatopancreas, intestines, etc.), eggs, or any dead or dying shrimp and/or crabs in the event of a *Karenia brevis* fish kill.

There is no research to support any type of closure for species of Penaeid shrimp (*Farfantepenaeus aztecus*, *Farfantepenaeus duorarum*, and *Litopenaeus setiferus*) and Blue Crabs (*Callinectes sapidus*) in any of the gulf states. Landsber, et.al (2009) explained there was a benthic mortality of Penaeid shrimp species and mole crabs (*Emerita spp.*) preceded two weeks before the September, 2005 *Karenia brevis* event at Boca Chica Beach, Texas; however, the article continues to say the direct correlation of the red tide, toxicosis, and indicators of poor water quality was suspected, but not confirmed. MDMR Shrimp and Crab Bureau will continue to research for any articles relating to *Karenia brevis* associated to Penaeid shrimp species and Blue Crabs.

*Reference:* Landsberg, J.H., L.J. Flewelling and J. Naar. "*Karenia brevis* red tides, brevetoxins in the food web, and impacts on natural resources: Decadal advancements." *Harmful Algal* (2009): 598-607.

